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Project Title: Synergism and detoxification mechanism of crude sugar apple seed extract in *Tetranychus truncatus* Ehara (Prostigmata: Tetranychidae)

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ABSTRACT

Synergism of maleic acid (MA), piperonyl butoxide (PBO) and triphenyl phosphate (TPP) combined with sugar apple seed extract on the mortality of *T. truncatus* adult females was performed by the spray method. Crude sugar apple hexane extract+0.5% MA induced the highest toxicity to *T. truncatus* (LC_{50} =2.27%), followed by crude hexane extract (LC_{50} =3.52%), crude hexane extract+0.2% PBO (LC_{50} =3.79%) and crude hexane extract+0.2% TPP (LC_{50} =4.13%). *Tetranychus truncatus* mites exhibited similar esterase activity levels (0.09-0.13 n mole/min/mg protein) in all treatments including the control (untreated mites). Mites in the control exhibited relatively higher GST activity (0.32 n mole/min/mg protein) compared to all other treatments (0.14-0.27 n mole/min/mg protein). Both synergism effect and detoxification mechanism suggested that glutathione S-transferase might play an important role in sugar apple seed extract degradation.

Key words: *Tetranychus truncatus*, synergist, detoxification mechanism, sugar apple extract